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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/237,128	01/25/1999	FRANK KASTENHOLZ	AGM-002	9585

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EXAMINER
HO, DUC CHI

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	**Applicant(s)**
Office Action Summary	09/237,128	KASTENHOLZ, FRANK
	Examiner	**Art Unit**
	Duc C Ho	2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>10 September 2002</u> .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)		4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)		5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .		6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(e) that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
>   (e) the invention was described in a patent granted on an application for patent by another
> filed in the United States before the invention thereof by the applicant for patent, or on an international
> application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section
> 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act

of 1999 (AIPA) do not apply to the examination of this application as the application

being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily

published under 35 U.S.C. 122(b). Therefore, this application is examined under 35

U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2.   Claims 1-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Irwin

(US 6,052,683).

        Regarding claim 1, Irwin discloses an apparatus for address lookup in packet

data communication networks.

        receiving header data of a network layer packet (a router inherently processes

an IP packet at network layer three in the seven layers that are defined in International

Standard Organization (ISO). An IP packet is a data packet that contains header

information and a payload, column 1, lines 37-42);

selecting a first one of the storage locations (an incoming destination address (IDA) 80 is a packet address consisting of four address bytes (n1.n2.n3.n4), column 7, lines 65-67, in which the first set of bytes n1.n2 *(first one)*is selected when the Lookup Table (LUT) is read for a network address, column 8, lines 1-9);

executing an instruction contained at the first selected storage location (since the LUT is a fully decoded 16 bit table each n1.n2 lookup has a preloaded memory location that provides the search sequence to be followed, column 8, lines 17-21).

Regarding claim 2, the memory location contains a second set of bits n3 or a prefix value /17 in the header of the IP packet (second one and a second set of bits), column 8, lines 17-27.

Regarding claim 3, column 5-line 35 to column 6-line 19, since there are a plurality of paths to be selected during a routing lookup, the packet is forwarded along a path that generates the longest match, which is the content of n3.

Regarding claims 4, and 27, if n3 is not the longest match, the n4 or the prefix value /20 is selected, column 6, lines 5-17.

Regarding claim 5, the packet is an IP packet in Irwin.

Regarding claim 6, Irwin discloses an apparatus for address lookup in packet data communication networks.

using a first set of bits from the destination address of the IP packet as an index to locate the first entry in a first forwarding lookup (an incoming destination address (IDA) 80 is a packet address consisting of four address bytes (n1.n2.n3.n4), column 7, lines 65-67, in which the first set of bytes n1.n2 *(first entry)*is selected when the Lookup Table (LUT) is read for a network address, column 8, lines 1-9);

*where the first entry in the first forwarding lookup provides direction to second
forwarding lookup* (the LUT is a fully decoded 16 bit table that provides the search
sequence to be followed, column 8, lines 17-21*), using a second set of bit from the
destination address as an index to locate a second entry in a second forwarding lookup*
(that search for a priority lower prefix value, one of /17,.../27-fig. 2, which corresponds
to the second set of bit n3....n4, column 8, lines 17-27*); and employing contents of the
second entry in forwarding the IP packet (*the IP packet is transmitted along a path that
generates the longest match which is the second set of bits n3 (contents of the second
entry) found in this case).

Regarding claims 7, and 30, referring to figure 4, the execution of an instruction
contained in the second entry to forward the IP packet toward the destination address
is inherently in the binary search module 62, column 6, lines 21-64.

Regarding claim 8, and 31, the LUT is a fully decoded 16 bit table that provides
the search sequence to be followed, column 8, lines 17-21, that search for a priority
lower prefix value, one of /17,.../27-fig. 2, which corresponds to the second set of bit
n3....n4, column 8, lines 17-27.

Regarding claims 9-10, if n3 is not the longest match, the n4 or the prefix value
/20 is selected as a third forwarding lookup for forwarding the IP packet, column 6, lines
5-17.

Regarding claims 11, and 20, since the search function are very simple, the
steps of the method of Irwin is inherently suited for implementation in hardware such as
CAM that includes an ASIC.

Regarding claim 12, Irwin discloses an apparatus for address lookup in packet

data communication networks.

providing a forwarding lookup with locations in memory, wherein the location are

*indexed by multiple bits (*referring to figure 6, a router equipped with address lookup

function including the RAM look up table module 86, and the binary search module 62,

wherein the destination address is represented in bits, column 7-line 65 to column 8-

line 17)*; and*

for each data packet to be forwarded, employing a first set of bits in the

destination address to locate and access at least one location in the forwarding lookup

to forward the data packet (an incoming destination address (IDA) 80 is a packet

address consisting of four address bytes (n1.n2.n3.n4), column 7, lines 65-67, in which

the first set of bytes n1.n2 is selected when the address of bytes n1.n2 of the Lookup

Table (LUT) is read to forward the data packet, column 8, lines 1-9) *, wherein the*

number of bits in the first set of bits is less than the total number of bits in the

destination address(the total bits of n1.n2 is less than that of the n1.n2.n3.n4 of the

destination address of an IP packet).

Regarding claim 13, the data packets are IP packet in Irwin.

Regarding claim 14, an incoming destination address (IDA) 80 is a packet

address consisting of four address bytes (n1.n2.n3.n4), column 7, lines 65-67, in which

the first set of bytes n1.n2 is for the first location; the second set of byte n3 is for the

second location; and the third set of byte n3 is for the third location, that are used to

forward any of the IP packet.

Regarding claim 15, Irwin discloses an apparatus for address lookup in packet data communication networks.

a first lookup structure storing entries that provide instructions regarding of forwarding of network layer packets, said entries being indexed by multiple bits (referring to figure 6, a router equipped with address lookup function including the RAM look up table module 86, and the binary search module 62 having memory location that is used for forwarding packet to its destination, wherein the destination address is represented in bits, column 7-line 65 to column 8-line 27)*; and*

a forwarding controller (CAM module 66-fig. 6) *for using a first set of bits (n1.n2) from the header data of each received packet as an index to locate an entry in the first lookup structure and for executing the instruction stored at the located entry in the first lookup structure (* an incoming destination address (IDA) 80 is a packet address consisting of four address bytes (n1.n2.n3.n4), column 7, lines 65-67, in which the first set of bytes n1.n2 is used as an index to locate an entry and for executing the search sequence, column 7-line 65 to column 8-line 27).

Regarding claim 16, see column 8, lines 1-54, the cam module 66 may direct the binary search module 62(processor), column 7, lines 18-29, for executing instruction.

Regarding claims 17-18, and 26, the entries n1.n2 of the first lookup structure are indexed by 2 bytes, column 7, lines 65-67.

Regarding claim 19, Irwin discloses an apparatus for address lookup in packet data communication networks.

multiple lookup structure for assisting in the forwarding of the IP packets (referring to figure 6, CAM modules 66, and 64 are the structure for assisting in the forwarding of the IP packets, column7-line 65 to column 8-line 55) *, and*

a processor (the binary search module 62-fig. 6, column 7, lines 17-25) *for*
executing the instructions in the entries of the lookup structures to forward the IP
packets.

Regarding claim 21, this claim has similar limitations as claims 6, 9, and 10.
Therefore, the claim is rejected under Irwin for the same reasons set forth in the
rejection of claims 6, 9-10.

Regarding claims 22-23, Irwin discloses the LUT and the search module 64 that
hold information regarding the ports on which IP packets arrive, and the instructions for
to access the lookup array, column 8, lines 1-16, and column 11, lines 26-45.

Regarding claim 24, this claim has similar limitations as claim 6. Therefore, the
claim is rejected under Irwin for the same reasons set forth in the rejection of claim 6.

Regarding claim 25, please see the rejection of claims 22-23.

Regarding claim 27, the step of extracting information from the header is inherent
in figure 4, column 6, lines 19-37.

Regarding claim 28, the packet is an IP packet in Irwin.

Regarding claim 29, this claim has similar limitations as claim 6. Therefore, the
claim is rejected under Irwin for the same reasons set forth in the rejection of claim 6.

Regarding claim 30, please see the rejection of claim 2.

Regarding claim 31, please see the rejection of claim 3.

Response to Arguments

3.   Applicant's arguments with respect to claims 1-31 have been considered but are
moot in view of the new ground(s) of rejection.

Conclusion

4.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Ho whose telephone number is (703) 305-1332. The examiner can normally be reached on Monday through Friday from 7:00 am to 3:30 pm.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700

5.   Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,

Arlington. VA, Sixth Floor (Receptionist).

Patent Examiner

Duc Ho

11-15-02